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PHASE I BOOK EXPLOITATION SOV/4237

Makarov, Il'ya Alekseyevich

Uskorennaya tekhnicheskaya podgotovka proizvodstva; iz opyta raboty mashinostroitel'nykh zavodov (Accelerated Engineering Preparation for Production; From the Experience of Machinery-Manufacturing Plants) Moscow, Mashgiz, 1960. 71 p. Errata slip inserted. 5,000 copies printed.

Reviewer: D. A. Biryukov, Engineer; Ed.: L. M. Ol'shevets, Candidate of Technical Sciences, Docent; Tech. Ed.: G. Ye. Sorokina; Managing Ed. for Literature on the Economics and Organization of Production (Mashgiz): T. D. Saksaganskiy, Engineer.

PURPOSE: This booklet is intended for technical personnel in machinery-manufacturing establishments, scientific research institutes, and specialized design offices.

COVERAGE: The book describes accelerated methods for preparatory operations in the production of new machines and analyzes the shortcomings of methods presently used. The principal advantages and economic effectiveness of preparatory operations are indicated. No personalities are mentioned. There are 18 references, all Soviet.

Card 1/3

MAKAROV, I.A., inzhener.

Rapid method of producing experimental machine samples. Vest.mash. 33 no. 3:55 Mr '53. (MLRA 6:5)
(Machinery industry)

MAKAROV, I.

An advanced plant should have an outstanding technical control.
Standartizatsiia 29 no.10:40-42 O '65.

(MIRA 18:12)

MAKAROV, I.

Powerful source of creative activity. NTO 5 no.4:21-23 Ap '63. (MIRA 16:3)

1. Predsedatel' Belorusskogo respublikanskogo soveta professional'nykh soyuzov.

(White Russia--Technological innovations)

MAKAROV, Grigoriy Yefimovich; ARESHCHENKO, Vladimir Denisovich; BARKAN, V.A., red.; YERMILOV, V.M., tekhn. red.

[Organization of work in forest enterprises] Organizatsiia truda na predpriiatiiakh lesnogo khoziaistva. Minsk, Gos.izd-vo sel'-khoz.lit-ry BSSR, 1961. 105 p. (MIRA 15:1)
(Lumbering) (Forest)

VORONIN, Ivan Vasil'yevich, dotsent; VASIL'YEV, Prokofiy Vasil'yevich, prof.; ARTSYSHKIN, Sergey Petrovich, inzh.; ISHIN, Dmitriy Petrovich, inzh.; KOSTYUKOVICH, Fedor Trofimovich, dotsent; MAKAROV, Grigoriy Yefimovich, inzh.; RADETSKIY, Vitaliy Il'ich, kand.sel'skokhoz.nauk; SABO, Yevgeniy Dyul'yevich, kand.tekhn. nauk; SUDACHKOV, Yevgeniy Yakovlevich, doktor sel'skokhoz.nauk; FEDOROVYKH, Mikhail Leonidovich, assistent; YANYSHKO, Anatoliy Davydovich, assistent; FUKS, Ye.A., red.izd-va; KUZNETSOVA, A.I., tekhn.red.

[Organizing and planning work at forestry enterprises] Organizatsiia i planirovanie proizvodstva na predpriiatiiakh lesnogo khoziaistva. Moskva, Goslesbumizdat, 1960. 328 p.
(MIRA 14:2)

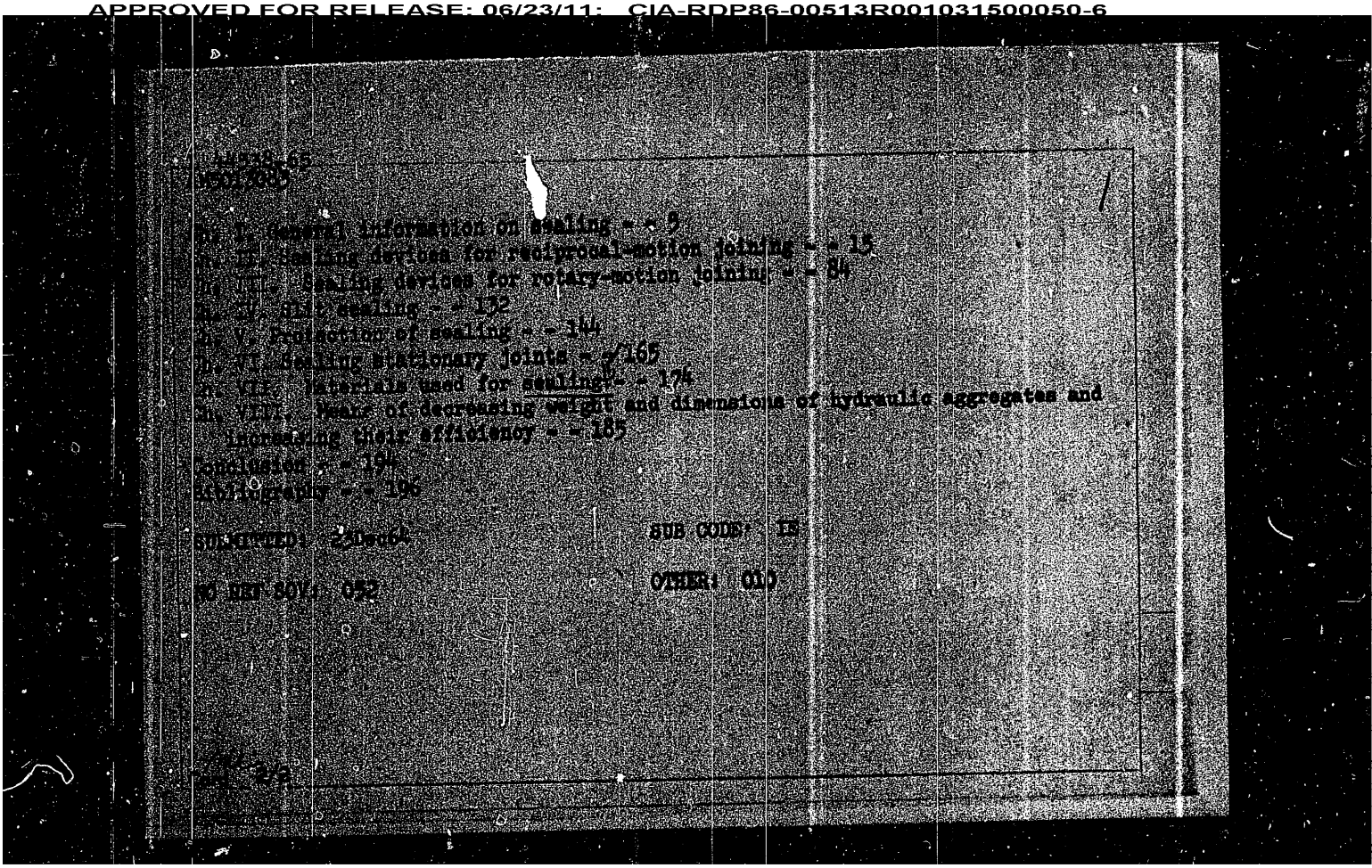
(Forest management)

MAKAROV, G. Ye.

TRUBNIKOV, Mikhail Mikhaylovich; MAKAROV, G.Ye., redaktor; AGRANOVSKAYA, N.D., redaktor izdatel'stva; SHITS, V.P., tekhnicheskiy redaktor

[Establishment of technical norms in forestry] Tekhnicheskoe normirovanie v lesnom khoziaistve. Moskva, Goslesbumizdat, 1956. 135 p. (MLRA 10:4)

(Forests and forestry--Production standards)



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WOL/ADD

Ch. I. General information on sealing - - 9
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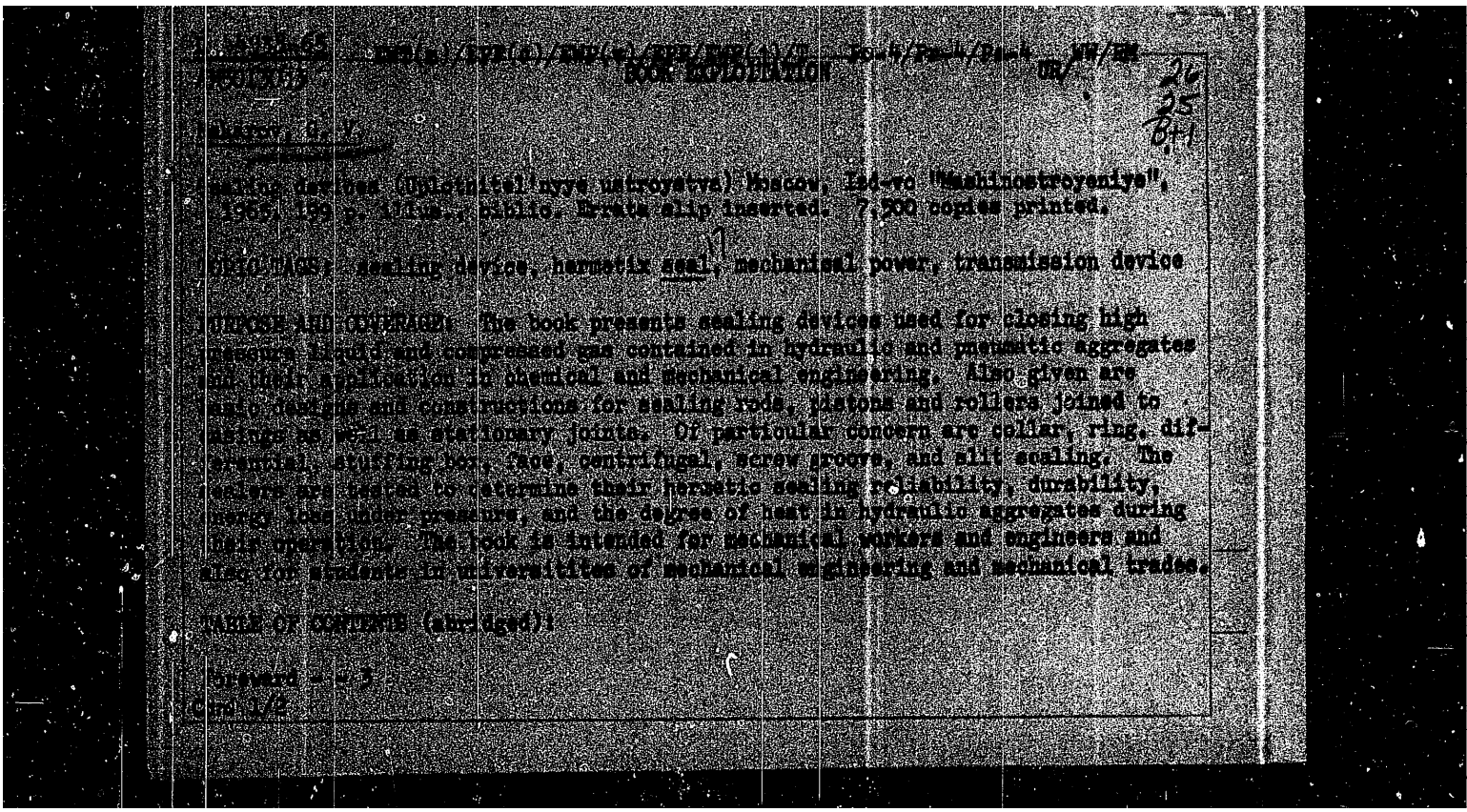
SUBMITTED: 23Dec64 SUB CODE: IE

NO REF SOV: 052 OTHER: 010



BOOK EXPLOITATION

Avtsyn, A. Y.

Sealing devices (Uplotnitel'nyye ustroystva) Moscow, Izd-vo "Mashinostroyeniye", 1965, 199 p. illus., biblio. Errata slip inserted. 7,500 copies printed.

SUBJECT AREA: sealing device, hermetic seal, mechanical power, transmission device

PURPOSE AND COVERAGE: The book presents sealing devices used for closing high pressure liquid and compressed gas contained in hydraulic and pneumatic aggregates and their application in chemical and mechanical engineering. Also given are basic designs and constructions for sealing rods, pistons and rollers joined to design as well as stationary joints. Of particular concern are collar, ring, differential, stuffing box, face, centrifugal, screw groove, and slit sealing. The devices are tested to determine their hermetic sealing reliability, durability, energy loss under pressure, and the degree of heat in hydraulic aggregates during their operation. The book is intended for mechanical workers and engineers and also for students in universities of mechanical engineering and mechanical trades.

TABLE OF CONTENTS (abridged):

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Card 1/2

Direct-current converter for automatic block systems. Avtom., telem. i sviaz' 2 no.11:22 N '58. (MIRA 11:12)

1.Nachal'nik Embinskoy distantsii signalizatsii i svyazi Kazakhskoy dorogi.

(Electric current converters)

L 20355-65

ACCESSION NR: AP4049479

the vibratory noise, thus improving working conditions. Constancy of the level of the metal in the crystallizer was easily maintained. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 01 SUB CODE: MM, EM

NO REF SOV: 002 OTHER: 000

Card 2/3

L 20155-65 EWT(l)/EWT(m)/EPF(n)-2/EPR/T-2/EWT(t)/EWA(bb)-2/EWP(b) Ps-4 IJP(c)/
ASD(a)/ASD(c)-5/AFETR/ESD(gs)/ESD(t) JD

ACCESSION NR: AP4048079 S/0136/64/000/011/0090/0092

AUTHOR: Rogozinskiy, A. A., Makarov, G. S., Mishchenko, V. D., Tarary*chkin, V. I.

TITLE: Use of an electromagnetic pump in the preparatory casting of magnesium alloys

SOURCE: Tsvetnyye metally, no. 11, 1964, 90-92

TOPIC TAGS: electromagnetic pump, magnesium alloy, nonmetallic impurity, flux enclosure, centrifugal pump, magnesium casting

ABSTRACT: In order to obtain magnesium alloy ingots with fewer impurities, mechanical action on the melt and its uptake of oxygen from the air have to be avoided. This may be accomplished by moving the melt from the mixer tank to the mold by electromagnetic means, thus providing a closed transit to the mold without mechanical disturbance of the melt. In the present paper, a laboratory apparatus is illustrated and described (see Fig. 1 of the Enclosure) for moving such melts by either centrifugal or electromagnetic means, making possible comparison of the results in the templets; with the latter method, these showed greatly increased purity of the metal (e.g. 0.04 as against 2.13% impurities) and only one case of non-metallic inclusion in 54 templets, compared to 5 in 37 templets using a centrifugal pump. Flux inclusions were rarely seen. Besides, the new method avoids

Card 1/2

PERLI, G.I., inzh.; SKIBITSKIY, M.S., inzh.; MAKAROV, G.S., inzh.

Experience in the operation of regenerative air preheaters.
Energomashinostroenie 7 no.3:35-37 Mr '61. (MIRA 16:8)

(Boilers--Firing) (Air preheaters)

L 20155-65 EWT(l)/EWT(m)/EPF(c)-2/EPR/T-2/EWP(t)/EPA(bb)-2/EWP(b) Pa-4 IJP(c)/
[illegible] ASD(a)-5/AFETR/ASD(m)-3/ASD(t) JD

MAKAROV, G.P.; DAYEN, P.A.; DOMKOVICH, V.V.

Mechanization of the conveying of tomato paste from the production shops to the warehouse of finished products. Kons. i ov. prom. no.7:7-9 Jl '63. (MIRA 16:9)

1. Proyektno-konstruktorskiy tekhnologicheskiy institut soveta narodnogo khozyaystva Moldavskoy SSR.

DEMIN, M.N.; MAKAROV, G.P.

Mechanization of warehouse operations in the "Oktiabr'" factory.
Kons.i ov.prom. 17 no.9:13-14 S '62. (MIRA 15:8)

1. Proyektno-konstruktorskiy tekhnologicheskiy institut sovnarkhoza Moldavskoy SSR.
(Industrial power trucks)
(Canning industry--Equipment and supplies)

BOGOSLOVSKIY, Yu.N.; ZHVAKINA, L.D.; KUDRYASHOV, V.I.; MAKAROV, G.N.

Simultaneous measurement of the thermal effects and the viscosity of coal during heating. Zav. lab. 31 no.11:1362-1363 '65.
(MIRA 19:1)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva.

ZHITOV, B.N.; MAKAROV, G.N.; DVORIN, S.S.

Coking of preheated coal and coal charges. Koks i khim. no.2: 16-23 '64. (MIRA 17:4)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I.Mendeleyeva (for Zhitov, Makarov). 2. Gosplan SSSR (for Dvorin).

BRONSHTEYN, A.P.; MAKAROV, G.N.; GORBATYY, Yu.Ye.; EPEL'BAUM, M.B.

Shrinkage and formation of phase stresses in coke. Koks i khim. no.8:22-27 '63. (MIRA 16:9)

1. Chelyabinskiy metallurgicheskiy zavod (for Bronshteyn). 2. Moskovskiy ordena Lenina khimiko-tekhnologicheskiy institut im. D.I.Mendeleyeva (for Makarov). 3. Ural'skiy filial Akademii stroitel'stva i arkhitektury (for Gorbatyy, Epel'baum).
(Coke)

BOGOSLOVSKIY, Yu.N.; KAZINIK, Ye.M.; MAKAROV, G.N.

Temperature distribution in a ring-shaped oven for the continuous coking of coal. Koks i khim. no.9:30-35 '62. (MIRA 16:10)

1. Moskovskiy khimiko-tekhnologicheskiy institut im. D.I.Mendeleyeva.
(Coke ovens--Testing)

BOGOSLOVSKIY, Yu.N.; KUDRYASHOV, V.I.; MAKAROV, G.N.

Automatic method of determination of the interval of the plastic state of coal. Zav.lab. 29 no.2:198-199 '63. (MIRA 16:5)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I.Mendeleyeva.

(Coal--Permeability)

BOGOSLOVSKIY, Yu.N.; KUDRYASHOV, V.I.; LUZYANIN, B.P.; MAKAROV, G.N.; MUZYCHENKO, L.A.

Method of automatic determination of ammonia in a current of gas. Zav.lab. 29 no.2:158-159 '63. (MIRA 16:4)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I.Mendeleyeva. (Ammonia) (Coke-oven gas)

KOGAN, L.A.; BOGOYAVLENSKIY, V.V.; MAKAROV, G.N.; SEMENOV, A.S.; KUZNETSOV, P.V.; MUSTAFIN, F.A.

Obtaining pitch coal coke for electrode manufacture. Koks i khim. no.3: 22-25 '63. (MIRA 16:3)

1. Vostochnyy uglekhimicheskiy institut (for Kogan, Bogoyavlenskiy), 2. Moskovskiy Ordena Lenina khimiko-tekhnologicheskiy institut im. D.I.Mendeleyeva (for Makarov, Semenov). 3. Nizhne-Tagil'skiy metallurgicheskiy kombinat (for Kuznetsov, Mustafin).
(Coke)

MAKAROV, G.N.; KAZINIK, Ye.M.; POPCHENKO, R.A.; SEMENOV, A.S.; YERKIN, L.I.; RYVKIN, I.Yu.; PRIVALOV, V.Ye.; MUSTAFIN, F.A.; KUZNETSOV, P.V.; ZOROKHOVICH, G.Ya.

Coking of the coal charge in an oven with a rotating ring floor. Koks i khim. no.11:34-41 '62. (MIRA 15:12)

1. Moskovskiy khimiko-tekhnologicheskiy institut im. D.I. Mendeleyeva (for Makarov, Kazinik, Popchenko, Semenov). 2. Vostochnyy uglekhimicheskiy institut (for Yerkin, Ryvkin, Privalov). 3. Nizhne-Tagil'skiy metallurgicheskiy kombinat (Mustafin, Kuznetsov, Zorokhovich).
(Coke)

ZHITOV, B.N.; MAKAROV, G.N.

Investigation of effect of preheating on the coal charge.
Koks i khim. no.16:3-6 '61. (MIRA 15:2)

1. Moskovskiy Ordena Lenina khimiko-tekhnologicheskiy institut
im. D.I.Mendeleyeva.
(Coke)

MAKAROV, G.N., kand.tekhn.nauk ; VAN CHZHAO-SYUN [Wang Chao-hsiung]

Coking of gas and long-flame coals. Koks i khim. no.6:3-6 '60.
(MIRA 13:7)

1. Moskovskiy khimiko-tekhnologicheskiy institut im. K.I. Mendeleyeva.
(Coal--Carbonization)

VAN CHZHAO-SYUN [Wang Chang-hsiung]; MAKAROV, G.N., kand.tekhn.nauk

Investigating the process of evolution of volatile products in coking. Koks i khim. no.4:15-19 '60. (MIRA 13:6)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva.

(Coal--Carbonization)

KOZLOVTSEVA, Z.I.; MAKAROV, G.N.

Effect of the conditions of coking on the microstructure, electric conductivity, and reactivity of coke. Trudy MKHTI no.28:89-95 '59. (MIRA 13:11)

(Coke--Carbonization) (Coke)

MAKAROV, G.N.; KOROLEV, Yu.G.; VORONIN, M.A.; BOGOSLOVSKIY, Yu.N.; FOFONOVA, M.Ya.

Effect of various factors on the yield of volatile products from the carbonization of a thin loosely-embedded layer of the coal charge MKGZ. Trudy MKHTI no.28:73-78 '59. (MIRA 13:11)
(Coal--Carbonization)

BOGOSLOVSKIY, Yu.N.; MAKAROV, G.N.; BRONSHTEYN, A.P.; MUZYCHENKO, L.A.; OMEL'CHENKO, B.N.

Effect of added coke on the process of carbonization of gas coal and on the quality of the coke produced. Trudy MKHTI no.28: 64-72 '59. (MIRA 13:11)

(Coal--Carbonization)

BOGOSLOVSKIY, Yu.N.; MAKAROV, G.N.; MUZYCHENKO, L.A.; OMEL'CHENKO, B.N.

Substitution of breeze for PS coals in charges of the Cherepovets Plant. Trudy MKHTI no.28:58-63 '59. (MIRA 13:11)

(Cherepovets--Coke)

DVORIN, S.S.; ZHITOV, B.N.; LERNER, R.Z.; MAKAROV, G.N.; SAZONOV, S.A.; SYSKOV, K.I.

Coking of preheated coals as a method of intensifying the production of coke and improving its quality. Trudy MKHTI no.28:28-37 '59. (MIRA 13:11)

(Coal--Carbonization)

ZHITOV, B.N.; IVANOV, Ye.N.; MAKAROV, G.N.; CHECHETKIN, A.V.

Investigation of the process of the preliminary thermal preparation of coals by means of a gaseous heat carrier. Trudy MKHTI no.28: 17-27 '59. (MIRA 13:11)

(Coal preparation)

SOV/68-58-11-7/25

AUTHORS: Wang Chao-hsun and Makarov, G.N.

TITLE: Investigation of the Thermograms of Low Rank Coals (Issledovaniye termogramm molodykh kamennykh ugley)

PERIODICAL: Koks i Khimiya, 1958, Nr 11, pp 18-23 (USSR)

ABSTRACT: Differential thermal analysis of five low rank coals (Table 1) is described. It is pointed out that at the present stage of development the method cannot provide answers regarding technological properties of coals and therefore should be applied in conjunction with the other physico-chemical investigating methods.
There are 4 tables, 3 figures and 7 references (3 Soviet and 4 English)

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva) Moscow Institute of Chemical Technology imeni D.I. Mendeleyev

Card 1/1

Coking of a Freely Lying Thin Layer of a Coal Charge 68-58-4-6/21

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva
(Moscow Institute of Chemistry and Technology imeni D. I. Mendeleyev)

1. Coal--Heating 2. Coke--Production 3. Industrial equipment --Operation 4. Industrial equipment--Performance

Card 4/4

Coking of a Freely Lying Thin Layer of a Coal Charge 68-58-4-6/21

coal on the coke quality was tested on parallel coking experiments with untreated coal and coal heated to a temperature 20-30°C lower than its softening temperature. The properties of treated coals - Table 7, experimental results - Table 8. In all cases with the exception of coal G (gas) the pretreatment of coal improved the quality of coke. In addition it was established that the condensing liquid coking products (tar, benzol) are evolved nearly completely in the first section of the furnace. A comparison of coking by-products obtained on bottom and top heating of the charge indicated that an increase in the roof temperature from 550°C to 900°C (from bottom to top heating) the yield of gas increases and the yield of tar decreases. The tar and raw benzol recovered on coking with top heating are very similar to products usually produced in coke ovens. It is concluded that using the above method of coking the production of metallurgical coke is possible not only from the usual blends but also from unblended gas coals.
There are 8 tables, 2 figures and 5 references, all of which are Soviet.

Card 3/4

Coking of a Freely Lying Thin Layer of a Coal Charge 68-58-4-6/21

Kuznetsk Zh coals and two industrial blends were tested (Table 1). The following operating factors were tested: 1) The influence of the method of heat supply on the coke quality. Top, bottom and two-side heating, under other conditions constant - Table 1; the duration and the rate of coking under the above three types of heating conditions - Table 2; the influence of heating conditions on some properties of the coke produced - Table 3. In all cases top heating produced coke of better strength and size distribution than the other two types of heating. 2) The influence of coking temperature. The coking temperature in the first section was varied from 700 to 1000°C (top heating) and kept constant at 1000°C in the second section (either with top or two-side heating). It was found that the influence of heating rate on the coke quality with this method of coking is approximately the same as under the usual coking conditions. 3) The influence of bulk density on the coke quality was found to be similar but less pronounced than under normal coking conditions (Table 6).

Card 2/4 4) The influence of a preliminary thermal treatment of

68-58-4-6/21

AUTHORS: Makarov, G. N. and Korolev, Yu. G., Candidates of Technical Sciences

TITLE: Coking of a Freely Lying Thin Layer of a Coal Charge (Koksovaniye svobodno lezhashchego tonkogo sloya ugol'noy zagruzki)

PERIODICAL: Koks i Khimiya, 1958, Nr 4, pp 16-23 (USSR)

ABSTRACT: A new continuous coking method is proposed. This is based on coking a thin layer (100-200 mm) of a coal charge on a moving bottom. Laboratory experiments were carried out in which a 3-4 kg coal charge was preheated in a drum furnace to a preplastic temperature and then charged into a pan in a special rectangular furnace (Fig.1) which was divided into two sections. In the first section the charge was heated to 550°C and then pushed into the second section where it was heated to a final coking temperature. The charge could be heated either from the top or from the bottom, or from both sides simultaneously. The discharged coke was coated in an inert atmosphere in a water cooled cupboard. The physico-chemical properties of coke were evaluated according to Refs. 2, 3 and 4, the remaining analysis according to GOST. Donets G and OS and

Card 1/4

The Investigations of the Coke Formation Process by the Method of Direct Electric Heating of the Coal Charge

SOV/156-58-3-41/52

was found that adding to the coal samples in coke formation do not influence the quality of the coke. There are 3 figures, 3 tables, and 2 references, which are Soviet.

ASSOCIATION: Kafedra pirogennykh protsessov Moskovskogo khimiko-tekhnologicheskogo instituta imeni D.I.Mendeleyeva (Chair of Pyrogenic Processes at the Moscow Chemical and Technical Institute imeni D.I.Mendeleyev)

SUBMITTED: October 29, 1957

Card 2/2

AUTHORS: Bogoslovskiy, Yu. N., Makarov, G. N., SOV/156-58-3-11/52
Uzunov, T.

TITLE: The Investigation of the Coke Formation Process by the Method of Direct Electric Heating of the Coal Charge (Issledovaniye protsessa koksovaniya metodom pryamogo elektronagreva ugol'noy zagruzki)

PERIODICAL: Nauchnyye doklady vysshey shkoly, Khimiya i khimicheskaya tekhnologiya, 1958, Nr 3, pp. 559 - 562 (USSR)

ABSTRACT: A coke formation process was investigated by direct electric heating using a special device. The coke formation was investigated in regard to various factors bearing on the properties and the quantity of the yield of solid, liquid and gaseous products. The measurements of the electric conductivity showed that coke of a granular size of 0,25 mm has the least electric conductivity. Also, coal dust reduces the electric conductivity. The maximum electric conductivity was found in coke of a granular size of 0 - 2 mm. The influence of the rate of heating on the gas emission in coke formation was investigated. With a velocity of 3-8°/min. the amount of gas emitted is reduced. It

Card 1/2

POLYANICHKO, Ya.I.; IL'INA, I.V.; MAKAROV, G.N.; ROMANOV, A.A.

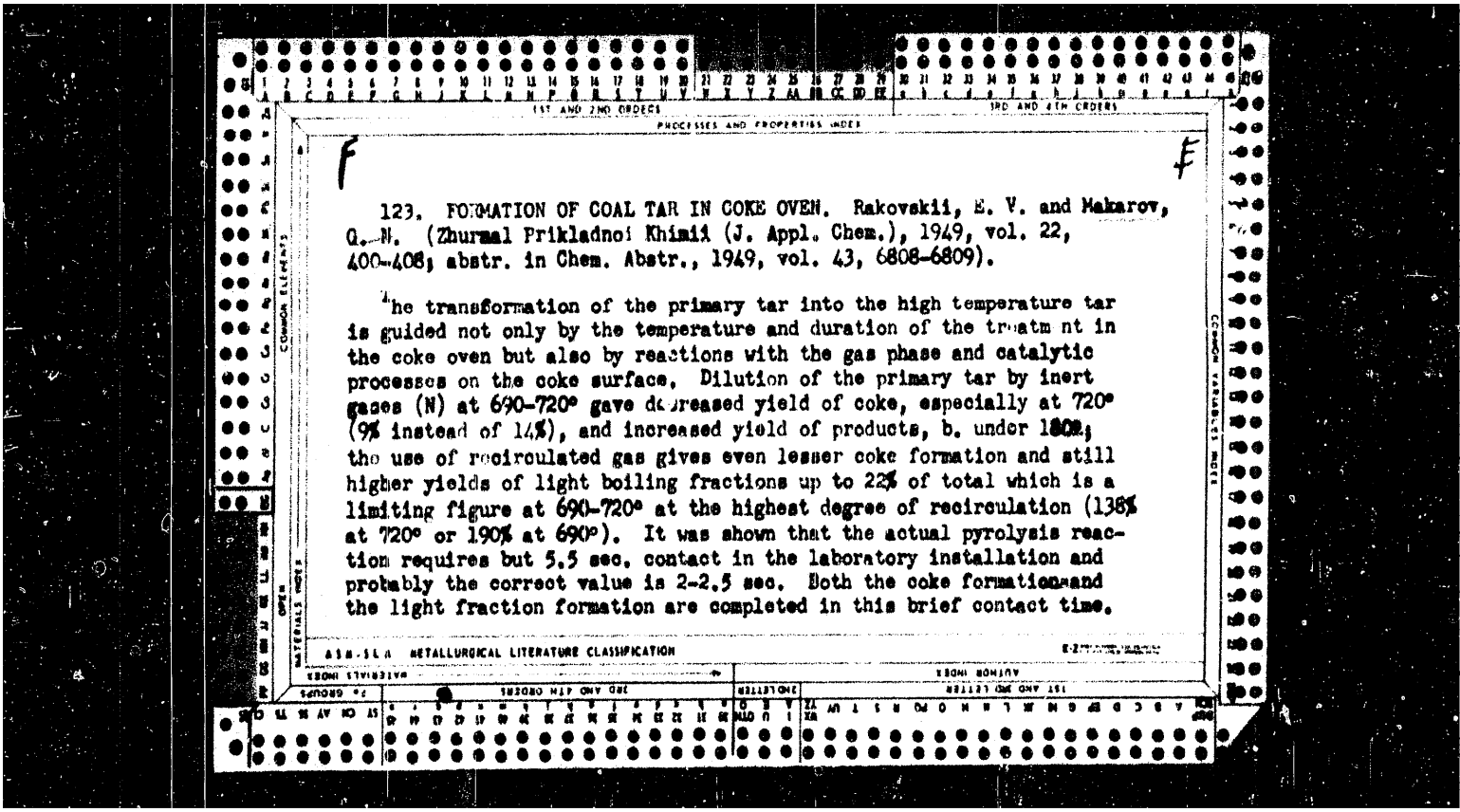
Scientific anniversary session of the Karelian Branch of the Academy of Sciences of the U.S.S.R. Izv. Kar. i Kol'. fil. AN SSSR no.2:177-181 '58. (MIRA 11:9)

(Karelia--Research)

MAKAROV, G.N., kandidat tekhnicheskikh nauk; ZHITOV, B.N., inzhener; SHASHKOVA, T.D., inzhener; SHTEYN, I.Ya., inzhener; GILYAZETDINOV, L.P., inzhener.

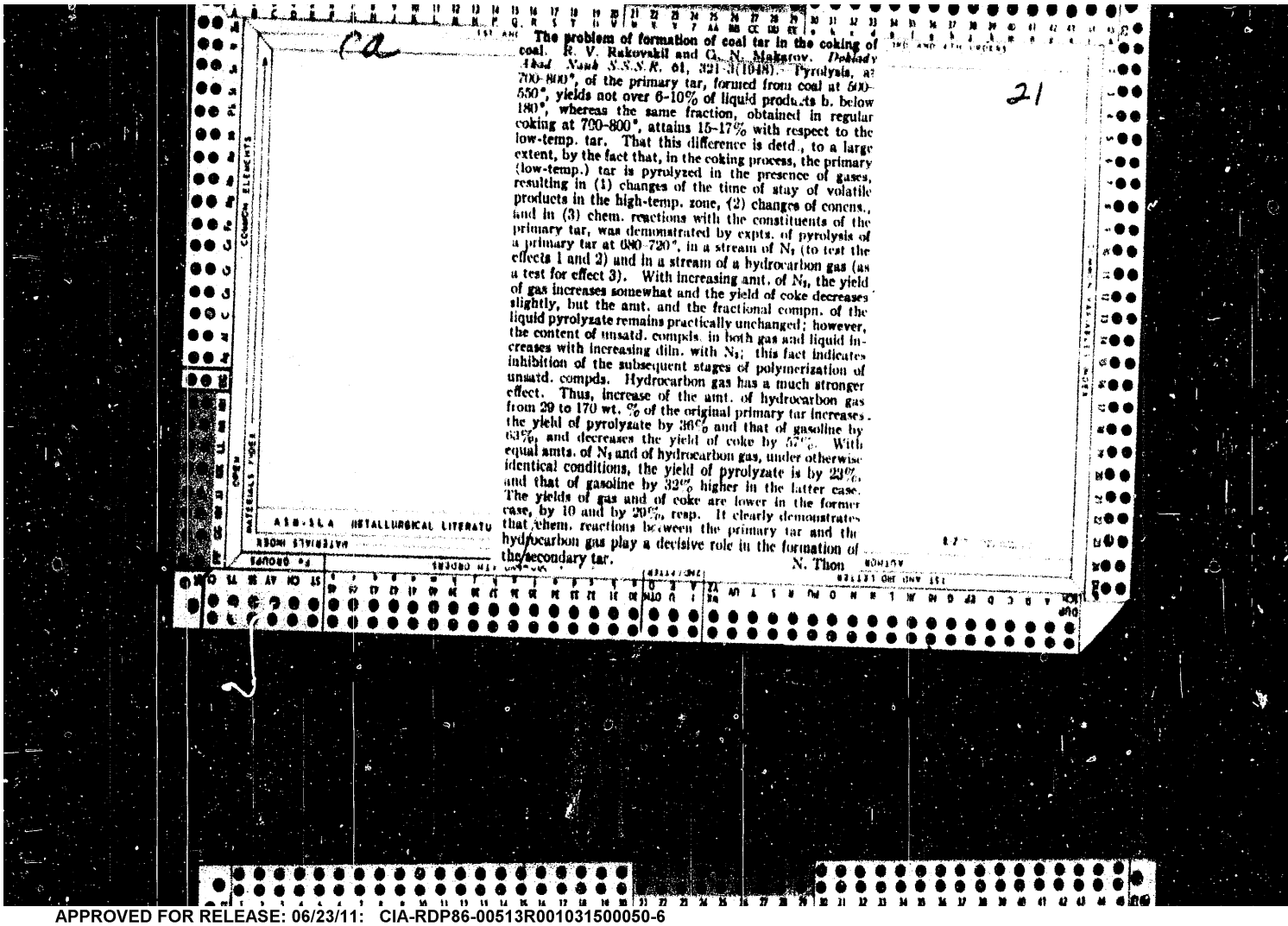
Preliminary heat treatment of coals for coking. Koks i khim. no.4:12-17 '57. (MLRA 10:5)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni D.I. Mendeleyeva.
(Coal--Carbonization)



123. FORMATION OF COAL TAR IN COKE OVEN. Rakovskii, E. V. and Makarov, G. N. (Zhurnal Prikladnoi Khimii (J. Appl. Chem.), 1949, vol. 22, 400-408; abstr. in Chem. Abstr., 1949, vol. 43, 6808-6809).

The transformation of the primary tar into the high temperature tar is guided not only by the temperature and duration of the treatment in the coke oven but also by reactions with the gas phase and catalytic processes on the coke surface. Dilution of the primary tar by inert gases (N) at 690-720° gave decreased yield of coke, especially at 720° (9% instead of 14%), and increased yield of products, b. under 180°; the use of recirculated gas gives even lesser coke formation and still higher yields of light boiling fractions up to 22% of total which is a limiting figure at 690-720° at the highest degree of recirculation (138% at 720° or 190% at 690°). It was shown that the actual pyrolysis reaction requires but 5.5 sec. contact in the laboratory installation and probably the correct value is 2-2.5 sec. Both the coke formation and the light fraction formation are completed in this brief contact time.



The problem of formation of coal tar in the coking of coal. R. V. Rakovskii and G. N. Maksirov. *Doklady Akad. Nauk S.S.S.R.* 61, 321-3(1948). Pyrolysis, at 700-800°, of the primary tar, formed from coal at 500-550°, yields not over 6-10% of liquid products b. below 180°, whereas the same fraction, obtained in regular coking at 700-800°, attains 15-17% with respect to the low-temp. tar. That this difference is detd., to a large extent, by the fact that, in the coking process, the primary (low-temp.) tar is pyrolyzed in the presence of gases, resulting in (1) changes of the time of stay of volatile products in the high-temp. zone, (2) changes of concns., and in (3) chem. reactions with the constituents of the primary tar, was demonstrated by expts. of pyrolysis of a primary tar at 680-720°, in a stream of N_2 (to test the effects 1 and 2) and in a stream of a hydrocarbon gas (as a test for effect 3). With increasing amt. of N_2, the yield of gas increases somewhat and the yield of coke decreases slightly, but the amt. and the fractional compn. of the liquid pyrolyzate remains practically unchanged; however, the content of unsatd. compds. in both gas and liquid increases with increasing diln. with N_2; this fact indicates inhibition of the subsequent stages of polymerization of unsatd. compds. Hydrocarbon gas has a much stronger effect. Thus, increase of the amt. of hydrocarbon gas from 29 to 170 wt. % of the original primary tar increases the yield of pyrolyzate by 36% and that of gasoline by 63%, and decreases the yield of coke by 57%. With equal amts. of N_2 and of hydrocarbon gas, under otherwise identical conditions, the yield of pyrolyzate is by 23% and that of gasoline by 32% higher in the latter case. The yields of gas and of coke are lower in the former case, by 10 and by 20% resp. It clearly demonstrates that chem. reactions between the primary tar and the hydrocarbon gas play a decisive role in the formation of the secondary tar.

N. Thon

MAKAROV G. N.

RAKOVSKIY, Ye and V. and Makarov, G.N, "On the use of coal tar in the coking of coal" (Summary of the paper), Soobshch. o nauch. rabotakh chlenov vsesoyuz khim. o-va im. Mendleyeva, 1948, Issue 3, p 7-9

SO: U-3261, 10 April 53. (Letopis 'Zhurnal 'Nykh Statey No. 11 1949).

NIKOLAYEV, A.I.; AKHMADIYEVA, A.Kh.; MAKAROV, G.F.

Formation of antibodies to sarcolysine and their effect on the antineoplastic activity of the preparation. Biul. eksp. biol. i med. 60 no.7:95-98 Jl '65. (MIRA 18:8)

1. Uzbekskiy nauchno-issledovatel'skiy institut rentgenologii, radiologii i onkologii (direktor - prof. D.M. Abdurasulov), Tashkent.

MAKAROV, G.D., inzh.

Spatial analysis of panel buildings. Nov.v stroi.tekh. no.13: 5-39 '59. (MIRA 13:4)
(Precast concrete construction)

GOL'TSOV, Vladimir, komandir korablya; MAKAROV, Fedor Timofeyevich; BORDACHEV, Vladimir, komandir samoleta, komsomolets; NAYDENOVA, Valentina; IVANOV, Boris Mikhaylovich; KULIKOVA, Galina, inzh; KARPYCHEVA, Alla, inzh.-ekonomist; GRIGOR'YEV, G.

By the call of conscience. Grazhd. av. 21 no.6:12-13 Je '64. (MIRA 17:8)

1. Sekretar' podrazdeleniya Vsesoyuznogo Leninskogo kommunisticheskogo soyuza molodezhi pri Bykovskom ob"yedinennom aviapodrazdelenii (for Gol'tsov). 2. Zamestitel' komandira Bykovskogo ob"yedinennogo aviapodrazdeleniya po politchasti aviatsii spetsial'nogo primeneniya (for Makarov). 3. Chlen komsomol'skogo shtaba "Za kul'turnoye obsluzhivaniye passazhirov" pri Bykovskom ob"yedinennom aviapodrazdelenii (for Naydenova). 4. Nachal'nik Linaynoy ekspluatatsionno-remontnoy masterskoy Bykovskogo ob"yedinennogo aviapodrazdeleniya (for Ivanov). 5. Chleny komiteta Vsesoyuznogo Leninskogo kommunisticheskogo soyuza molodezhi, Bykovskoye ob"yedinennoye aviapodrazdeleniye (for Kulikova, Karpycheva). 6. Spetsial'nyy korrespondent zhurnala "Grazhdanskaya aviatsiya" (for Grigor'yev).

MAKAROV, F.N., red.; BERG, L.V., st. nauchn. sotr., red.

[Materials of the Scientific Technological Conference on the Problems in the Establishment of Machinery for Mountain Lumbering Camps and in the Increase of Labor Productivity] Materialy Nauchno-tekhnicheskoi konferentsii po voprosam sozdaniia tekhniki gornykh lesozagotovok i povysheniia proizvoditel'nosti truda. Krasnodar, Izd-vo "Sovetskaia Kuban'," 1963. 103 p. (MIRA 17:10)

1. Nauchno-tekhnicheskaya konferentsiya po voprosam sozdaniya tekhniki gornykh lesozagotovok i povysheniya proizvoditel'nosti truda, 1962. 2. Nachal'nik laboratorii Kavkazskogo filiala Tsentral'nogo nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy promyshlennosti (for Makarov). 3. Kavkazskiy filial Tsentral'nogo nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy promyshlennosti (for Berg).

MAKAROV, F. N

USSR/Miscellaneous - Gear cutting

Card : 1/1

Authors : Makarov, F. N.

Title : A device for cutting bevel spur gears.

Periodical : Stan i instr., 3, 33, Mar 1954

Abstract : A device, designed by F. N. Kharlamov, for cutting bevel spur gears manually. A diagram illustrates construction of the device.

Institution : .....

Submitted : .....

responsible for winding faults. Hence, the article suggests that the stator slots be made open, machine-manufactured coils be embedded into the slots, and magnetic wedges be used for locking the coils and improving the motor characteristics. Tabulated test data of such an experimental motor (A051-2, 4.5 kw, 3000 rpm) proves that its characteristics are practically as good as those of the semiclosed-slot-type motor. These characteristics are found to be superior to those of CEM (a French company) induction motors which have open slots but no magnetic wedges. The open-slot-magnetic-wedge design is recommended for series A3 and AO3 Soviet-made induction motors. Orig. art. has: 4 figures, 1 formula, and 3 tables.

SUB CODE: 09/10/ SUBM DATE: none / ORIG REF: 006

L 10032-67 EWT(1)

ACC NR: AP6022904 SOURCE CODE: UR/0292/66/000/004/0007/0010

AUTHOR: Gol'dberg, O. D. (Candidate of technical sciences); Makarov, F. K. (Engineer)

35

ORG: none

TITLE: Enhancing the reliability of induction-motor windings by their proper design

29

SOURCE: Elektrotekhnika, no. 4, 1966, 7-10

TOPIC TAGS: electric motor, induction motor, reliability, electric rotating equipment

ABSTRACT: Experience with induction motors in the Vladimir City recorded during 1964-65 has shown that about 35% of all motor failures were due to faults in their windings. Mush winding in semiclosed stator slots made by hand from enamelled wire was found to have numerous insulation defects which later were

Card 1/2

UDC: 621.313.333.025.3.001.2

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031500050-6

MAKAROV, F.G.

Universal attachment with the use of hydroplastics. Mashinostroitel' no.1:30 Ja '63. (MIRA 16:2)
(Milling machines—Attachments)

MAKAROV, F.G.

Machining tails of turbine blades. Mashinostroitel' no.6:40 Je '62. (MIRA 16:5)

(Turning)

MAKAROV, F. G.

Mechanizing the chamfering of noncircular holes. Mashinostroitel' no.10:6 '62. (MIRA 15:10)

(Machine-shop practice)

MAKAROV, F. F.

Using oxidized high-hydrogenated petroleum fractions of isostructural hydrocarbons (oxidate) for fat-liquoring of hides. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch. i tekh. inform. no.10:50-52 '62. (MIRA 15:10)

(Tanning) (Hydrocarbons)

METELKIN, A.I., kand.tekhn.nauk; KUZ'MINA, Ye.V.; MAKAROV, F.F.

Using syntan in neutralizing chrome leather. Biul.tekh.-ekon.inform.-Gos.nauch.-issl.inst.nauch. i tekh.inform. no.7:54-56 '52. (MIRA 15:7)

(Tanning) (Tanning materials)

MAKAROV, F.F.; SAFONOVA, Z.V.

Use of oxidized highly hydrogenated petroleum fractions of isostructural carbohydrates for leather stuffing. Kozh.obuv. prom. 4 no.8:18-20 Ag '62. (MIRA 15:8)
(Leather) (Petroleum products)

MAKAROV, F.F.

Treatment of chrome tanned Russian leather used in manufacturing footwear by means of hot vulcanization. Biul.tekh.-ekon.inform. no.3:48-50 '61. (MIRA 14:3)

(Tanning)

SAFONOVA, Z.V., kand.tekhn.nauk; MAKAROV, F.F.

Using hydrogenated petrolatum for stuffing sole and Russian leather.
Kozh.-obuv.prom. 2 no.5:17-19 My '60. (MIRA 13:9)
(Leather) (Petrolatum)

MAKAROV, F.F.; SAFONOVA, Z.V.

Hydrogenated petrolatum for fat liquoring of hard and Russian leather. Biul.tekh.-ekon.inform. no.5:57-58 '59.
(MIRA 12:8)

(Tanning)

MAKAROV, E.V.

Reproduction of Azov sturgeons and their present stock. Trudy VNIRO no.54:203-230 '64. (MIRA 18:2)

1. Azovskiy nauchno-issledovatel'skiy institut rybnogo khozyaystva.

MAKAROV, E.V.

Use of helicopters in building and assembling work. Mekhanizatsiia i avtomatizatsiia stroit. no. 4:118-119 '64.

or equivalently

$$\varphi_2' \cos \varphi_2 = i_0 - \int_0^{\varphi_1} S(\varphi_1)\, d\varphi_1,$$

and

$$\varphi_2 = \arcsin \int_0^{\varphi_1} \left(i_0 - \int_0^{\varphi_1} S(\varphi_1) d\varphi_1 \right) d\varphi_1 .$$

From these, the transfer function $i = \varphi_2'$ can be found, and the eccentric gears can be constructed. In practice, elliptical gears have found wide application. In these, if e = eccentricity of the ellipse, then the expressions

$$\varphi_2' = \frac{i_{max}}{\cos^2 \frac{\varphi_1}{2} + i^2_{max} \sin^2 \frac{\varphi_1}{2}} = 1; \quad \varphi_2'' = -\frac{i_{max}(i^2_{max} - 1) \sin \varphi_1}{2\left(\cos^2 \frac{\varphi_1}{2} + i^2_{max} \sin^2 \frac{\varphi_1}{2} \right)^2}$$

can be substituted into the equation for $S(\varphi_1)$, and the latter can be expanded in a Fourier series (where $\left[1 + e\right] / \left[1 - e\right] = i_{max}$). The functions $i(\varphi_1)$ and $S(\varphi_1)$ for e = 0, 1/5, and 1/3 are plotted. Orig. art. has: 3 figures and 7 formulas.

SUB CODE: 13/ SUBM DATE: 14Jun63/ ORIG REF: 002
forced vibrations

BVK
Card 3/3

L14725-66
ACC NR: AP6003986

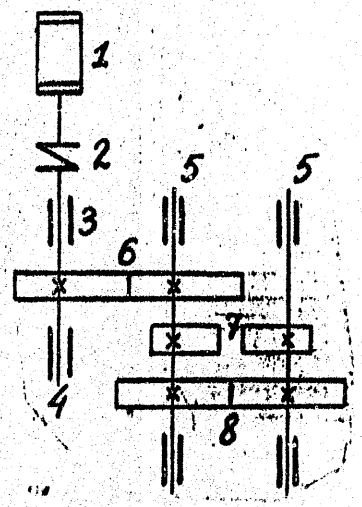


Fig. 1. Kinematics of multi-frequency vibrator: 1 - electric drive; 2 - elastic coupling; 3 - bearings; 4 - input shaft; 5 - driven shaft; 6 - eccentric gears; 7 - unbalances; 8 - gears with i = 1.

consisting of desired harmonics) then ϕ_2 must satisfy

$$\varphi_2'' \sin\varphi_2 - \varphi_2'' \cos\varphi_2 = S(\varphi_1)$$

(where ϕ_2 = driven shaft angle, primes refer to differentiation with respect to ϕ_1)

Card 2/3

L 14725-66 EWT(d)/EWT(m)/EWP(w)/T/ETC(m)-6/ IJP(c) WW/EM/DJ
ACC NR: AP6003986 SOURCE CODE: UR/0145/65/000/008/0042/0045

AUTHOR: Makarov, E. S. (Senior lecturer)

ORG: Rybinsk Aviation-Technological Institute (Rybinskiy aviatsionno-tekhnologicheskiy institut)

TITLE: Multi-frequency vibrator with an eccentric wheel mechanism

SOURCE: IVUZ. Mashinostroyeniye, no. 8, 1965, 42-45

TOPIC TAGS: electric vibrator, vibration synthesis, forced vibration, Fourier series

ABSTRACT: For successful compacting of ground, the natural frequency of the vibrator on the ground must be near the frequency of the exciting forces. To follow the changing frequency, the vibrator has to provide a force consisting of a number of desired harmonics. This can be accomplished by a multi-frequency vibrator with eccentric gears as shown in Fig. 1. If the desired excitation force is to change according to the relationship

$$P(\varphi_1) = 2m\omega_1^2 r S(\varphi_1),$$

(where ω_1 and ϕ_1 = input angular velocity and shaft angle; $S(\phi_1)$ = function

UDC: 625.731.2

Card 1/3

ACC NR: AT6030946

process; 8) thermal treatment of the weld joint immediately after welding; 9) mechanical working at the weld joint immediately after welding. The results of several weld strength tests are presented. In these tests the strength of the welds was measured for a variety of conditions, including hand and automatic welding, use of several types of weld materials and base materials, direct versus alternating current welding, etc. Other tests were for the purpose of contrasting the effect of preliminary cold working on steel in the normalized versus the annealed condition. Failed specimens are shown, a discussion of the various failure mechanisms is presented, and surface conditions are analyzed with respect to their effects on crack formation. Further experimental analyses were performed on commercial steels to determine the effect of the weld-cooling rate on the weld bond. Test results were compared with theoretical studies on the welding thermal cycle. Orig. art. has: 13 figures.

SUB CODE: 11/13/ SUBM DATE: 11Mar66/ ORIG REF: 007/ OTH REF: 014

Card 2/2

ACC NR: AT6030946 (N) SOURCE CODE: UR/0000/66/000/000/0227/0242

AUTHORS: Makarov, E. L. (Candidate of technical sciences); Subbotin, Yu. V. (Engineer); Prokhorov, N. N. (Doctor of technical sciences)

ORG: none

TITLE: Means for increasing the resistance of steels to the formation of cold cracks during welding

SOURCE: Moscow. Vysshaye tekhnicheskoye uchilishche. Prochnost' svarnykh konstruktsiy (Strength of welded structures). Moscow, Izd-vo Mashinostroyeniye, 1966, 227-242

TOPIC TAGS: weld effect, weld evaluation, metal welding, welding equipment, welding technology, metal bonding

ABSTRACT: An analysis was made and an experimental study was conducted to determine means for increasing the resistance of steels to the formation of cold cracks during welding. Basically, nine methods are identified: 1) the rational alloying of basic and built-up metal; 2) the selection of weld materials of a defined content with minimal hydrogen content; 3) the selection of the optimal technology and welding conditions; 4) the processing of the basic metal before welding so as to obtain a favorable base structure; 5) the elimination of the effect of stress concentrators by varying the surface layer properties of the metal; 6) control of the welding thermal cycle; 7) thermomechanical treatment of the weld joint during cooling in the welding

ACC NR: AT6030942

effectiveness of the following types of preliminary processing was tested: homogenization, annealing with lamellar pearlite, hardening and drawing, annealing with granular pearlite, tempering and drawing after annealing with granular pearlite. These various thermal processes are contrasted with regard to their tendencies to promote or inhibit cold-crack formation. Results presented include microstructure photographs, microhardness values in the parent metal and in the vicinity of a joint, and dilatometric curves for conditions of a weld thermal cycle. Orig. art. has: 6 figures.

SUB CODE: 11, 13/ SUBM DATE: 11Mar66/ ORIG REF: 002/ OTH REF: 004

Card 2/2

ACC NR: AT6030942 (A) SOURCE CODE: UR/0000/66/000/000/0133/0142

AUTHOR: Makarov, E. L. (Candidate of technical sciences)

ORG: none

TITLE: The effect of preliminary thermal processing of steel on the process of cold-crack formation in welding

SOURCE: Moscow. Vysshoye tekhnicheskoye uchilishche. Prochnost' svarnykh konstruktsiy (Strength of welded structures). Moscow, Izd-vo Mashinostroyeniye, 1966, 133-142

TOPIC TAGS: welding technology, welding, metal welding, crack formation, pearlite, steel, aluminum, titanium, niobium/ 30KhGSA steel

ABSTRACT: Preliminary thermal treatment of steel before welding has an effect on the process of cold-crack formation. Thermal treatment changes the degree of uniformity of the hard mixture, the state of the carbide phase, the grain size, the grain edges, etc. Several earlier research efforts in this field are cited, and brief summaries of findings are given for studies on chromium-molybdenum steels and steels with aluminum, titanium, and niobium additives. The current article describes research performed on various forms of preliminary thermal processing of 30KhGSA steel (0.33 C; 1.03 Si; 0.91 Mn; 0.80 Cr; 0.14 Ni). The studies were aimed at improving the resistance of the material to the formation of cold cracks by controlling the basic structure. The

Card 1/2

L 10287-67
ACC NR: AT6030943

austenite dissociation is directly or indirectly established leads to a direct relationship between the dissociation process and the formation of cold cracks in welding. Orig. art. has: 5 figures.

SUB CODE: 11, 13/ SUBM DATE: 11Mar66/ ORIG REF: 005/ OTH REF: 002

Card 3/3

ACC NR: AP6030943

device based on magnetic induction was designed for the experimental work. A schematic diagram of the apparatus is given with a brief description of its operation. Measurements were made with several steels to ascertain the variation of the resistance of steels to the formation of cold cracks in welding with the characteristics of the process of excess austenite decomposition. Other measurements were made to determine the supercooling thermal cycle (see Fig. 1),

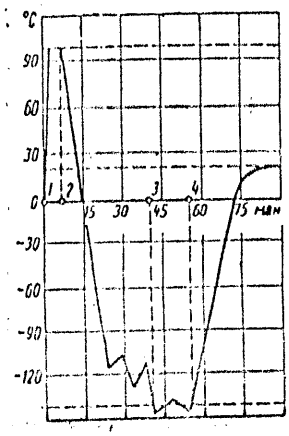


Fig. 1. The thermal cycle of supercooling of specimens after welding to negative temperatures. 1--2 - heating period; 2--3 - period of cooling to a low temperature; 3--4 - duration at low temperature

and low temperature effects on strength were recorded for various steels. The authors conclude that none of the applied methods of study in which the process of excess

L 10287-67 EWT(m)/EWP(v)/EWP(t)/EWP(k)/ETI JD/HW/GD

ACC NR: AT6030943 (A) SOURCE CODE: UR/0000/66/000/000/0143/0150

AUTHORS: Makarov, E. L. (Candidate of technical sciences); Gospodarevskiy, V. I. (Engineer)

ORG: none

TITLE: A study of the effect of the dissociation of excess austenite on the appearance of cold cracks in welding

SOURCE: Moscow. Vysshoye tekhnicheskoye uchilishche. Prochnost' svarnykh konstruktsiy (Strength of welded structures). Moscow, Izd-vo Mashinostroyeniye, 1966, 143-150

TOPIC TAGS: welding, welding technology, austenite steel, austenite, metal welding

ABSTRACT: The role of decomposition of excess austenite in the appearance of cold cracks in welding was studied. A brief review of the "state of the art" is given. The authors note that the conclusions of some investigators show that there is much disagreement on how excess austenite leads to cracking of welded materials. An experimental study of the effect of the process of dissociation of austenite on cold-crack formation was conducted in the laboratory Technological Strength of Metals in Welding, MVTU (Tekhnologicheskaya prochnost' metallov pri svarke MVTU). Experiments were conducted using two methods: the magnetometric method on specimens of the dilatometric type and on welded specimens with supercooling. The magnetic method is more convenient for studying austenite dissociation in steel specimens, and a special

Card 1/3

MAKAROV, E.L., kand.tekhn.nauk

Effect of moisture of electrode materials on steel resistance to the formation of cold cracks during welding. Trudy MVTU no.106:149-156 '62. (MIRA 16:6)
(Steel--Brittleness) (Electrodes)

41866

S/549/62/000/106/006/010
I003/I203

/ 2300

AUTHOR: Makarov, ..L., Cand. Techn. Sciences

TITLE: A comparison of various methods for determining the resistance of steels to cold cracking during welding

SOURCE: Moscow. Vysshoye tekhnicheskoye uchilishche. [Trudy] no. 106, 1962. 137-148. Svarka tsvetnykh splavov i nekotorykh legirovannykh staley

TEXT: The effectiveness of the methods described by S.L. Hoyt, C.E. Sims, and H.M. Banta in the Weldin Journal, 1945, No. 9, and by C.B. Voldrich in the Welding Journal, 1947, No. 3, is compared with that of the CTS and LTP methods developed in the MVTU im. Bauman. The author comes to the conclusion that the methods of Hoyt and Voldrich make it possible to evaluate only a very limited number of materials, because of the extreme thermal conditions created during testing. The CTS method permits the evaluation of a wider assortment of materials, as it combines real thermal conditions during welding with rather extreme thermal stresses. The LTP method permits the evaluation of the resistance to cracking of all materials, under any welding conditions. There are 8 figures and 2 tables.

Card 1/1

MAKAROV, E.L., kand.tekhn.nauk

Plasticity of steel in the austenite transformation process during welding. Trudy MVTU no.106:66-71 '62. (MIRA 16:6)
(Steel--Welding) (Plasticity)

MAKAROV, E.L.

Remarks on the theory of hot crack formation. Lit. proizv. no.4: 48 Ap '62. (MIRA 15:4)

(Metal castings--Defects)

Methods of determining ...

specimen dimensions, the composition of some of the tested steel grades, and graphs illustrating the test results. The effect of various technological means of raising the crack resistance was investigated, i.e. preheating, roasting of electrodes and fluxes, forging, selecting the composition of weld metal, etc. Forging is stated to be a very effective means of combatting cracking in the affected zone, which is apparently due to stress relief in the specimens. There are 6 figures, 3 tables and 9 references: 6 Soviet and 3 non-Soviet-bloc references. The three references to English-language publications read as follows: C.L.M. Cottrell, H.D. Jackson, I.G. Whitman, Control of Cracking in Arc Welding High Tensile Structural Steels, "Welding Journal", No. 4, 1952; S.L. Hoyt, C.E. Sims, H.M. Banta, Metallurgical Factors of Underbead Cracking, "Welding Journal", No. 9, 1945; C.B. Voldrich, Cold Cracking in the Affected Zone, "Welding Journal", No. 3, 1947.

ASSOCIATION: MVTU im. Baumana (MVTU im.Bauman)

SUBMITTED: June 19, 1961

Card 3/4

Methods of determining ...

the stresses in the welded metal into active (in the weld and the affected zone) and reactive (in base metal beyond the affected zone) stresses, and the applied external load imitates the "reactive" effect. The shape of specimens may be different - T, butt joint, etc. A T-specimen and the suggested test machine design are illustrated (Fig. 1 and 2). The test consists in loading a series of specimens with weights of different sizes. Load is gradually applied 2-30 minutes after welding, for a period of 0.5-1 minute, and is held for at least 20 hours. The time of complete rupture of the specimens is fixed, and specimens left solid are investigated for cracks. The test results are presented in graphs showing the destructive stresses and destruction time. The quantitative cracking resistance index is the minimum tensile stress that causes rupture or cracks. Cracks are revealed by etching with a weak solution of nitric acid poured on the metal. The minimum possible loading time is conditioned by the cooling of the affected zone, down to 400-350°C, i.e. the start of austenitic transformation. The specimens have to be large enough to allow internal stresses, depending on the properties of the weld and the base metal, to form. The article includes details of test techniques,

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S/125/61/000/011/001/012
D040/D113

AUTHORS: Prokhorov, N.N. and Makarov, E.L.

TITLE: Methods of determining and controlling the resistance of steels to cold cracking during welding

PERIODICAL: Avtomaticheskaya svarka, no. 11, 1961, 3-13

TEXT: A detailed description of a new cold cracking test method is given, and the hypothesis of steel strength on which the method is based, is discussed. The principle of the method consists in the application of an external force, produced by a weight, during the time when austenitic transformation occurs in the welded specimen. The method, suggested by N.N. Prokhorov, was verified in experiments with various steel grades and electrode materials in manual and automatic welding. It is stated that existing tests for the technological strength of steel in welding do not always properly reflect the strength under actual welding conditions, and reference is made in this connection to several foreign and Soviet tests including those conducted by K.G. Nikolayev and B.A. Gololobov (Ref. 4: "Svarochnoye proizvodstvo", No. 9, 1956). The theory underlying the new method provides for a subdivision of

Card 1/4 3

Methods of Physical Examination. The Investigation of the Decomposition Kinetics of Austenite in Steels Under the Conditions of a Thermal Welding Cycle

SOV/32-25-2-21/78

ASSOCIATION: Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana (Advanced School of Technology im. Bauman)

Card 3/3

Methods of Physical Examination. The Investigation of the SOV/32-25-2-21/7
Decomposition Kinetics of Austenite in Steels Under the Conditions of a
Thermal Welding Cycle

The sample (3 x 5 x 100 mm) can be quickly heated to a high temperature by passing through a powerful current. It is protected from oxidation by being placed in an inert-gas circuit. The temperature is measured by thermoelements, and the cooling velocities are recorded on an oscillograph 1) at 500°, approximately 20° per second, and 2) at 500° and approximately 5° per second. 15 types of steel were tested (Table), the samples were heated up to 1200°, and the cooling was done by one of the two cycles mentioned above. A representation of the thermal cycles and dilatometric curves of the 40Kh steel is contained in the paper (Fig 2). In the tests with an electrode (with a UONII 13/45 cover) on weakly alloyed wire, the steel welding was carried out in accordance with the thermic cycles of the dilatometric investigations. The investigation results (Fig 4) prove that under the welding conditions described, with austenite decomposition and temperatures below 300°, steels show a marked reduction of the resistance to cracking due to low temperatures. There are 4 figures and 1 table.

Card 2/3

SOV/32-25-2-21/78

18(7)
AUTHORS: Prokhorov, N. N., Makarov, E. L., Gospodarevskiy, V. I.

TITLE: Methods of Physical Examination (Fizicheskiye metody issledovaniya). The Investigation of the Decomposition Kinetics of Austenite in Steels Under the Conditions of a Thermal Welding Cycle (Issledovaniye kinetiki raspada austenita v stalyakh v usloviyakh termicheskogo tsikla svarki)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 2, pp 164 - 166 (USSR)

ABSTRACT: The decomposition kinetics of austenite determine the character of the mechanical property changes in steel (e.g. the increase of internal structural tensions and the factors influencing the cold-shortness). The investigations described in the present paper were carried out by means of a newly designed photomechanical special dilatometer. The apparatus works on the principle of determining the test distortions by measurements of photoresistors (of the FS-K2 type). The thermal processing of the dilatometric samples is done by passing through electric current. The dilatometer consists of a mechanical distortion meter, an optical system and the photoresistor with an electron amplifier (Fig 1).

Card 1/3

Strength of Steel in the Process of Austenite Transformation During Welding

destructions of the metal it must by all means be considered that it is caused by certain conditions of temperature and time of the load and the structure of the metal. The resistability to deformations on the edges of the cores changes with the alterations in the toughness of the inter-crystalline layers and in the deformation speed. In the deformation process of the austenite the inter-crystalline layers are also tough, but the tenacity rises considerably. The mechanical characteristics of steel, which is treated in a thermi- welding cycle, can be used for a relative estimation of the strength of the basic metal to resist the formation of cracks in welding. There are 4 photographs, 4 graphs, 2 diagrams and 12 references, 7 of which are Soviet and 5 English.

ASSOCIATION: MVTU im. Baumana (Moscow Higher Technical School im. Bauman)

part the machine is described in detail. The diagram "force-deformation" is written on a sheet of paper which is fixed on a drum. The methods of the examinations were developed in the welding laboratory of the MVTU and are perfected in this study. The tests were carried out with flats of 3x15x135 mm with a circular turned hole in the center. The tests were carried out for three thermic cycles, which are characterized by a heating up to 1300°C in 8-10 sec. and a medium cooling speed of 5, 20, and 200°C sec at 500°C. The deformation strength was determined by the bending power of the dynamometric spring. After the destruction the durability limits and the cross contraction were determined. The thermic welding cycle in testing the formation of cracks was selected similarly to that in the tests of the mechanical characteristics. As the data show that the durability changes under retarded destruction just as the resistability of steels against the formation of cold cracks in the welding. Analyzing the inter-crystalline

Strength of Steel in the Process of Austenite Transformation During Welding

obtained. In these tests the steel decayed because of brittleness, which was partly inter-crystalline and partly inner-crystalline, under loads which were considerably below the breaking strength. The destruction of the steel in this case was similar to that, which was observed as a cause of the formation of cold cracks in the zone of the thermal influence of the welding. The study which is here presented gives the results of mechanical tests of steels, which were heat-treated in the welding cycle under different speeds of deformation. For the tests a machine was constructed which differs from the common types by that its motion speed for the moveable arms was changed in the limits of 22 - 0,00015 mm/s. The machine consists of the following main parts: the system to heat the sample in the given time by exposing it to an electric current; the mechanical gear; and the mechanism to register the strength and the elongation of the part during the destruction. The scheme of the machine is given in figure 3. In the following

Strength of Steel in the Process of Austenite Transformation During Welding

of cold cracks thus permits the assumption, that cold cracks are formed on the edges of the cores. In the literature this assumption is confirmed. Consequently a kinetic analysis of the mechanical qualities in the disintegration process of the austenite, taking in regard certain conditions causing the inter-crystalline destruction of the steels, must be the basis for an estimation of the tendency of steels to form cold cracks. If the timing conditions are neglected in the tests, the character of the destruction is changed, i.e. the inter-crystalline destruction is replaced by the inner-crystalline one. The results obtained in such tests cannot be used to estimate the tendency of the steels to form cold cracks during the welding. There is no agreement between the mechanical characteristics of the steel under the conditions in the zone of thermic influence of the welding seam and the tendency of these steels to form cold cracks during the welding. In tests with constant loads, however, a certain agreement between these characteristics was

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AUTHORS: Prokhorov, N.N., Doctor of Technical Sciences, Makarov, E.L., Engineer, and Yakushin, B.F., Engineer

TITLE: Strength of Steel in the Process of Austenite Transformation During Welding

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 8, pp 12-15 (USSR)

ABSTRACT: Metallographic examinations of the cold cracks in the zone thermic effect in joints of low-alloy steels show, that the cracks are brittle and are mostly found at the periphery of the initial authenite cores. Figure 1 shows a microphoto of a typical crack in the zone near a welding seam of low-alloy steel. It can be seen that the crack goes along the edge of the cores and only in some cases cuts through the core. Figure 2 shows a cold crack of short length, which was found in the zone of thermic influence on a sample of low-alloy steel, which had been tested in regard to its tendency to form cracks. This microphoto clearly shows the inter-crystalline character of the cold cracks. An analysis of the damages in the formation

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Investigation of the Kinetics of Decomposition of Austenite in Steels During Welding

The described method of study of the kinetics of decomposition of the austenite during welding enables approximate evaluation of the resistance of steels to forming cold cracks as a result of various regimes of welding.
There are 5 figures, 1 table and 3 references, 2 of which are English and 1 Soviet.

ASSOCIATION: MVTU imeni Bauman

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Investigation of the Kinetics of Decomposition of Austenite in Steels During Welding

are open-circuited prior to welding. During cooling of the specimen after welding the magnetic circuit is gradually closed by the welded joint as the austenite decomposes. Re-establishment of the magnetic conductivity in the welded joint of the specimen leads to an increase in the magnetic flux of the core. The resulting changes of the magnetic flux induces an e.m.f. in the metering coil, which is either measured by a galvanometer or recorded oscillographically simultaneously with the temperature of the specimen. The chemical compositions of the steels from which the test specimens were made are entered in a table, p 15. In one series of experiments, the speed of cooling of the specimens from 500 °C was 5 °C/sec; in another, it was 20 to 25 °C/sec. In Figure 4, the temperatures of austenite decomposition during welding are garphed for various steels. In Figure 5, the dependence is graphed of the resistance of steels against the formation of cold cracks during welding on the temperature of completion of the austenite decomposition (Curve A) and on

 the maximum intensity of the austenite decomposition (Curve B).

Investigation of the Kinetics of Decomposition of Austenite in Steels During Welding

magnetometrically of welded specimens on a specially designed instrument, the principle of operation of which is based on recording of the changes in the magnetic properties of the steel during $Fe_\gamma \rightarrow Fe_\alpha$ transformation in the process of cooling after welding. In the thermally influenced zone of the basic metal the material changes into the austenitic state and becomes non-magnetic. During decomposition of the austenite the welded joints assume a magnetic conductivity. Recording of the changes in the magnetic conductivity of the welded joint together with changes in the temperature in the zone around the joint at the fusion line permits investigating the kinetics of decomposition of the austenite during welding. A sketch of the instrument is shown in Figure 1, p 14. It consists of a Π-shaped core which carries two coils; one of these generates a DC flux in the core; the other measures the magnetic flux of the core. During operation the magnetic circuit is closed with the welded specimen,

 which consists of two plates, 10 x 50 x 100 mm; these

SOV/129-59-3-3/16

AUTHORS: Prokhorov, N.N., Doctor of Technical Sciences, Professor and Makarov, E.L., Gospodarevskiy, V.I., Engineers

TITLE: Investigation of the Kinetics of Decomposition of Austenite in Steels During Welding (Issledovaniye kinetiki raspada austenita v stalyakh pri svarke)

PERIODICAL: Metallovedeniye i Termicheskaya Obrabotka Metallov, 1959, Nr 3, pp 13 - 16 (USSR)

ABSTRACT: "Cold cracks" during welding form in the process of decomposition of austenite. The kinetics of decomposition of austenite are determined to a considerable extent by the resistance of the steel to the formation of cold cracks. Cottrell (Refs 1, 2) as well as the authors of this paper investigated the relation between the temperature of completion of the decomposition of austenite (measured dilatometrically) and the resistance of the steels to the formation of cold cracks during welding. Critical temperatures were established at which the process of decomposition of the austenite is completed and below which the tendency of the steels to crack formation increases sharply. In this paper, the kinetics of the decomposition of austenite was investigated

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MAKAROV, E. L., Candidate Tech Sci (diss) -- "Investigation of the resistance of steels to the formation of cold fissures in welding". Moscow, 1959. 15 pp (Min Higher Educ USSR, Moscow Order of Lenin and Order of Labor Red Banner Higher Tech School im N. E. Bauman), 150 copies (KL, No 24, 1959, 138)

the described method can be successfully applied in scientific research organizations in order to gather data for practical use. There are 6 diagrams, 5 graphs, 1 table, 2 sets of photos and 2 Soviet references.

ASSOCIATION: MVTU imeni Baumana (MVTU imeni Bauman)

1. Welded joints--Fracture 2. Welded joints--Test results

MAKAROV, E.L.

SOV-135-58-9-6/20

AUTHORS: Prokhorov, N.N., Doctor of Technical Sciences, Professor and Makarov, E.L., Engineer

TITLE: Methods of Evaluating Steel Resistance to Cold Crack Formation in Welding (Metodika otsenki soprotivlyayemosti staley obrazovaniyu kholodnykh treshchin pri svarke)

PERIODICAL: Svarochnoye proizvodstvo, 1958, Nr 9, pp. 15-18 (USSR)

ABSTRACT: Information is presented on methods of investigating the sensitivity of welded joints in different grades of steel (chemical composition given in a table) to cold crack formation. The proposed methods were developed by the authors together with K.I. Zaytsev and Aspirant Syuy-Tszy-Tsay (1950 - 1955). The article contains detailed description of tests, investigated specimens, devices and technology used, including investigation of zones adjacent to seams, artificial cooling, preheating and subsequent heating of the specimens. The performed tests proved that

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COVERAGE: This is a collection of technical papers and reports presented by the representatives of various educational, industrial, and research organizations at the 1956 welding conference. They deal with problems of strength of welded connections and structures, automatic arc and resistance welding of steels, and nonferrous metals and alloys. No personalities are mentioned. There are 109 references, 95 of which are Soviet, 12 English, and 2 German.

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MAKAROV E.L.

PHASE I BOOK EXPLOITATION 927

Mezhvuzovskaya konferentsiya po svarke, 1956

Sbornik dokladov...(Reports of the Interuniversity Conference on Welding, 1956) Moscow, Mashgiz, 1958. 266 p. 7,000 copies printed.

Sponsoring Agency: Moscow. Vyssheye tekhnicheskoye uchilishche.

Ed.: Nikolayev, G.A., Doctor of Technical Sciences, Professor; Ed. of Publishing House: Mezhova, V.A.; Tech. Ed.: Tekhanov, A.Ya.; Managing Ed. for Literature on Heavy Machine Building (Mashgiz): Golovin, S.Ya., Engineer.

PURPOSE: This book is intended for welding engineers and technical personnel of scientific research organizations.

~~Card 1/6~~

MAKAROV, E. F., GOL'DANSKII, V. I., KHRAPOV, V. V.,

"Structural Studies of Tin-Organic Carboxylates, Poylmer Tin-Organic Oxides and Related Compounds by the Mossbauer Effect,"

report presented at the 3rd Intl. Conf. on the Mossbauer Effect, Cornell Univ., New York, 4-7 Sep 63